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NOTES ON A VOYAGE TO THE GREENLAND SEA IN 1888.

By Robert Gray.

[Since the publication of my notes on a voyage to the Greenland Sea in 1886 (Zool. 1887, pp. 48, 94, 121), I have twice visited the Arctic Seas, *viz.* in 1887, and during the present year. The 'Eclipse,' the vessel in which I sailed, is a full-rigged ship of 450 tons burden, fitted with auxiliary engines of 80 h. p., nominal. She carries eight whale-boats, and is manned by a crew of fifty-five, all told. She is still commanded by my father, Capt. David Gray, who has now completed his fortieth voyage as Master of a whaler to the Arctic Seas. As in 1886, the main object of our voyage was the capture of the Greenland-Right Whale, *Balæna mysticetus*, the price of whose whalebone has now made it at once the most valuable, and one of the rarest of all the Mammalia. In the following communication I propose giving a brief account of our voyage, a few extracts from my 'Log,' with occasional remarks and observations on some of the animals we met with, and the more important phenomena of the Greenland Sea.—R. G.]

Leaving Peterhead on April 16th, the 'Eclipse,' having called at Lerwick, where twenty-five Shetland men were shipped, two days afterwards finally set sail for the Greenland Sea. From the Shetlands the whalers usually steer N.N.E. towards the island of Jan Mayen; but, owing to the strong easterly winds which prevailed, we were driven far to the westward, out of our course. On the 20th we weathered the Færoes, passed within 120 miles of Iceland on the 22nd, and on the 26th, in lat. 69° 20′, long.

BRITISH MUSEUM

6° 29′ W., southward from Jan Mayen about eighty miles, we met the first pack ice.

As far as I could discover, during our progress northward, there was a greater appearance of cetacean life than farther to the eastward along our usual route, more especially with regard to the Bottle-nose Whale, *Hyperoodon rostratus;* birds also were more numerous. The following are a few extracts from my 'Log' concerning this part of our voyage:—

April 19.—Position at noon, lat. 61° 43′, long. 1° 10′ W. Water clear and blue. Besides a solitary Gannet seen now and again throughout the day patiently seeking its food, a Raven appeared near the ship in the morning, and an Oystercatcher at noon. Kittiwakes and Mallemokes were fairly numerous; of the latter we noticed the first about mid-day.

April 21.—Lat. 62° 49′, long. 4° 6′. Water clear and colourless all day: temperature at the surface, 42°. Four Bottle-nose Whales were seen in the morning, and at night we passed a whaling brig which quite recently had killed some of these animals.

April 22.—Lat. 65° 2′, long. 8° 17′ W. The sea was green in the morning, but afterwards became blue and clear, the change being accompanied by a rise of temperature. Eight different herds of Bottle-nose Whales were seen during the day, all stationary and probably feeding, while three vessels which we saw were probably Bottle-nose whalers. Many Rotjes (Little Auks) seen, also two Snowflakes and a young Burgomaster.

April 23.—Lat. 66° 30′, long. 7° 50′ W. Spoke the s. s. 'Haardraada,' Norwegian sealer, Capt. Castberg, recently engaged in prosecuting the seal fishing, but now in search of Bottle-nose Whales. From Capt. Castberg we learnt the news of the young Saddle-sealing. The main body of seals were found west from Jan Mayen about ten miles, but owing to the open nature of the ice, the result of strong westerly winds, they were greatly scattered. Twenty-one Norwegian ships captured 38,200 seals, while three Scotch ships secured 1700, making a total of 39,900, which can far from pay the expense incurred in their capture, and which forms but a sad comparison with a total of over 400,000 killed in 1850.

April 25.—Lat. 68° 28′, long. 5° W. Water clear and blue; temperature at the surface 35°. Bottle-nose Whales very numerous, all more or less stationary, and evidently feeding. They appeared to be going deep for their food, judging by the length of time they remained under water, and by their heavy and prolonged expirations while lying at the surface. Several herds of these whales swam round and round the ship, sometimes passing quite close under the stern; once I noticed the sunlight glance upon the breath of one, a beautiful but transitory bow being formed. Concerning one which we killed I made the following notes:—

Sex.—Male.

Colour.—Greyish black on the sides, shaded above to black along the ridge of the back, as well as towards the extremities and margins of the fins; shaded below to greyish white along the surface of the throat and belly.

*Measurements.**—From a perpendicular erected at tip of jaw to base of beak, 1 ft.; to angle of mouth, 2 ft.; to "blowhole," 3 ft. 4 in.; to eye (centre of pupil), 3 ft. 6 in.; to auricular opening, 4 ft. 1 in.; to occipital condyles, 4 ft. 10 in.; to pectoral fins, 5 ft. 10 in.; length of pectoral fins, 2 ft. 4 in.; greatest breadth of ditto, 8 in.; to anterior end of base of dorsal fin, 13 ft. 10 in.; to posterior end of ditto, 15 ft. 6 in.; height of dorsal fin, 1 ft. 3 in.; to the most anterior part of the lobes of the tail, 20 ft. 10 in.; to the most posterior part of ditto medianally, 22 ft. 10 in.; to the centre of a line joining the lateral tips of caudal fin, 23 ft. 8 in.; extreme breadth of caudal fin, 5 ft. 10 in.; girth at the eyes, 8 ft. 3 in.; at the neck, 12 ft. 7 in.; at 3 ft. behind pectoral fins, 12 ft. 7 in.; thickness of blubber, 4 in.

Contents of Stomach.—An immense quantity of cuttle-fish remains, mostly beaks and crystalline lenses, but there were a few almost entire, which I recognised as *Gonotus fabricii*, a cephalapod which seems to be largely preyed on by this whale.

Parasites.—A few *Cyamus thompsoni* attached to the skin of the forehead, the angles of the mouth, and the upper surface of the lobes of the tail near their posterior margins.

After reaching the ice, we commenced working northwards along its margin, now steering eastwards along an outlying point, again crossing a deep "bight" in which the ice ran more to the westward. With reference to the whaling grounds which occupy a more or less central position, certain terms are used by the whalers to designate the neighbouring ice. Thus the ice discharged from the Polar basin, and carried southward along the Greenland coast by the Arctic current, is called the "west ice," the ice which occasionally comes round the south end of Spitzbergen out of the Barentz Sea the "east ice," while the ice formed during severe frosts in an intermediate area of more or less still water "south-east pack." The "west ice," amongst which the capture of *Mysticetus* is solely carried on in these seas, is an ever-moving stream of ice coming from the northward, having its position mainly determined by the current which, flowing at an average velocity of about ten miles per day, carries the ice in its sinuous course, now to the eastward, now to the westward, forming a series of "points" and "bights" which, being remarkably constant in position, are well known to the whalers, several being designated by names. The ice, as it leaves the Polar basin, is mostly in the form of "floes," circular sheets of ice from ten to twenty miles in diameter, crumpled up round the edges owing to contact with one another, and varying considerably in thickness, ruggedness, &c. In its progress through the Greenland Sea, the ice is largely affected by the strength and direction of the winds. While northerly winds accelerate the drift of the ice, driving it southwards in compact masses at the rate of sometimes fifty miles a day, southerly winds have an opposite effect, greatly counteracting the drift, and spreading the ice outwards. Again, westerly winds, so much beloved by whalers, gradually spread the ice seawards, a series of open spaces of water alternating with strips of ice being formed, somewhat pleasing in appearance to the eye; while easterly winds, with their usual accompaniment "swell," soon convert the ice into a dismal and heaving pack of broken ice. The amount of ice in different years is subject to considerable variation, fluctuating between extreme limits with a certain periodicity, related either to the severity of the preceding winter or to the rate of the set or current, but probably mainly to the latter, as the amount of ice in any season has been observed to be inversely proportional to the drift of the ice itself. Finally, the amount of ice, having increased during the winter, and therefore at a maximum during the spring, gradually decreases during the summer, more especially in a season of easterly winds.

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* The measurements referring to any of the cetaceans throughout these notes are, unless otherwise stated, between vertical transverse planes supposed to pass through the parts mentioned.

This year the position of the "west ice" was fairly normal, but from the presence of a "south-east pack," in so far, the season was remarkable. This body of ice, formed only in seasons of severe frost, occupies an east and west position generally to the northward of the parallel of lat. 76°; it consists almost entirely of young or "bay" ice formed *in situ*, and seldom of great thickness. Lying in an area of more or less still water, unless in so far as affected by the winds, this ice remains almost stationary, gradually melting during the summer, and finally disappearing altogether. The "south-east pack," although delaying somewhat the progress of the ships northward, by preventing the swell from breaking up the ice on the whaling grounds, performs an important office to the whaler, and its presence accordingly is hailed as a good omen.

Meeting the "south-east pack" in lat. 75°, we at first endeavoured to continue our progress northward along the margin of the "west ice," which could still be easily distinguished by its greater thickness, but eventually we had to abandon this attempt, and, retracing our steps seawards, proceeded eastwards along the margin of the south-east ice. On May 11th, having reached lat. 77° and long. 3° E., and finding the ice farther east running to the southward, we entered the pack, and commenced forcing our way northward through the young ice. The sea immediately to the westward of Spitzbergen, which is usually open, we found, as we proceeded northward, entirely covered by ice, and it was not until the evening of the 15th, when, having reached lat. 80° 13′ we entered the "north water." The following are a few notes which I made during this part of our voyage:—

May 1.—Lat, 72° 45′, long. 4° 46′. Water clear and blue; temperature 30° at the surface. A few Saddle Seals, *Phoca grœnlandica*, lying on the ice. Several which we shot were at the age when known to the sealers as "Spots." These Seals are probably about six weeks old, having escaped the general slaughter at the young sealing about a month before. They are bluish grey in colour, shaded to dark blue on the back, to silvery grey on the belly, and marked over with black spots, especially on the sides (hence the name). One which I measured was 3 ft. 6 in. in length from the tip of the nose to the tip of the tail, and 2 ft. in girth at the shoulders. The stomachs of several which I examined were empty. My father informs me that the capture of these "Spots" formed, until some twenty or thirty years ago, a fishery of considerable importance; and it is clear that if the Seals are allowed to multiply by an extension of the close time, the Saddle Seal fishing would, to a large extent, be restricted to their capture at this age. The "Spots" are found on the scattered pieces of ice at the pack edge, the fishing being carried on during the latter part of April and the beginning of May. The Seals take the ice early in the morning, on which they sleep during the day, entering the water again at night, probably to feed.

May 6.—Lat. 75° 29′, long. 5° 13′. Water alternately blue and green; temperature at the surface, 30°. In the green water I noticed a great abundance of minute organisms, just visible to the naked eye. They appeared to consist of a spherical mass of colourless, gelatinous matter, with collections of cells (probably diatoms) embedded in different parts of its matrix. I afterwards found that although these organisms were usually, they were not always, present in the green or diatom-stained water, while a few occurred occasionally in the blue unstained parts of the sea.

May 11 to 14.—During our progress northward through the S.E. pack the sea had an olive-green, and sometimes a brownish, colour, owing to the presence of Diatomaceæ. The ice I noticed, as the ship tore it up with her iron-shod stem, was in many places stained a yellowish brown colour. This is the condition sometimes known to the whalers as "rotten ice." I observed that when the ship came in contact with a piece of discoloured ice, it had a tendency to split along its plane of flotation into two horizontal halves, a deal of discolouring matter being exposed. So far then, the diatoms, appeared to be locked up in a central and horizontal stratum of the ice, agreeing with its plane of flotation, and this view I afterwards found was supported by making sections of the ice itself. Later on we frequently noticed pieces of ice with their margins, and especially the cavities, extending horizontally inwards, formed by the action of the sea along the line of flotation, stained yellowish brown with diatoms. Finally, the discoloration was almost entirely restricted to the "young" or "bay" ice of which the S.E. pack is formed, the much more permanent "heavy" or "old" ice floating in ordinary circumstances in clear and unstained water.

With these facts before us, we can have little difficulty in understanding the formation of "rotten ice," and its presence in the S.E. pack. That part of the Greenland Sea, consisting for the most part of an area of still water, and whose surface waters are usually so deeply stained with the characteristic colour of vegetable organisms, bounded on the east by the coast of Spitzbergen, and on the west by the ever-fluctuating eastern margin of the "west ice," known to the whalers as the "Spitzbergen land water," having during a period of severe frost become frozen over with sheets or "floes" of young ice, and this ice having become broken up by the action of swell into the form known as "pancake ice," and the "pans" having become separated, would, as already explained, become eaten into, and stained with diatoms round their line of flotation. We have next to suppose another spell of cold weather; the pieces of "pancake" ice, separated somewhat from one another, become reunited by the formation of additional ice, the whole forming a "congealed" pack, with here and there pieces of ice which, if crashed into by a ship or otherwise broken, would appear diatom-stained in the manner already described. With these conclusions the observations of Scoresby entirely agree, but from Dr. Robert Brown, who investigated the subject ('Trans. Bot. Soc. of Edinburgh,' vol. ix., pp. 244—252), I venture to differ. Dr. Brown, having found a number of pits on the under surface of the ice containing and formed by collections of diatoms, arrives at the conclusion that these minute organisms, by melting the ice, play an important part in the economy of these seas. Now, so far as I have observed, the discoloration is restricted to recently formed ice, occurring in parts of the sea usually open, the ocean, where permanently covered by ice, being always clear and blue, and unstained by diatoms; also the discolouring matter, when present, occupies a position round the margin of a horizontal stratum agreeing with the plane of flotation, and bounded in that plane by the outline of the ice.

May 15.—Lat. 79° 50′, long. 5° 15′ E. Water dark green; temperature at the surface, 29°. Auks and Divers very numerous; also many Narwhals, floe Seals, and a few Bears. A male

Walrus which was shot measured 11 ft. from the tip of the nose to the extremity of the spine, and 9 ft. in girth. The stomach of this Walrus was filled with large pieces of Seal's skin, with the blubber attached, and also of pieces of liver. Last season we shot two, and both their stomachs were similarly filled; one of them, which was shot in the water, had a floe Seal in its mouth which it had just captured; so that the unfortunate floe Seals, persecuted on the ice by the Bears, are preyed upon by the Walrus while in the water.

At this point a few words might be said with regard to the distribution and migrations of *Mysticetus* in these seas. The facts known are not numerous. A line drawn icewards, at right angles to the sea margin, passes through the habitat of this animal. Following the course of such a line, the ice usually greatly broken up at the sea-edge owing to the action of the swell, would be found to consist of larger and larger pieces of ice, until finally the unbroken floes, as they left the Polar basin, would be found. *Mysticetus* would first be met with on losing the swell, and therefore a very variable distance through the ice, while beyond—a somewhat more sharply defined, but still more variable line—it would not be found. Between these ever-changing limits there is an area for the most part covered with floes and loose ice, which forms the habitat of the Greenland-Right Whale. With regard to their migrations two well-marked movements occur, *viz.*, the advance of the Whales northward in spring, and their retreat southward in the autumn or "fall." These migrations are undoubtedly associated with the presence of "bay" or "young" ice. During winter the open spaces between the pieces of old or heavy ice become frozen over, the sea being uniformly covered with ice. With the advance of spring, and consequent rise of temperature, the "bay" ice, as it is termed, gradually melts or ceases to form on the open spaces of water which are continually breaking out amongst the ice. Following the progress of this event, the northward migration occurs, while on the re-formation of the "bay" ice, in the Fall, the Whales again return south. From this it follows that the area inhabited by *Mysticetus* might be represented by a band of variable breadth running parallel to the edge of the ice, the animal being most usually present where the temperature of the water is just above the freezing point. In the Greenland

Sea these Whales usually reach lat. 73° early in April, 75° about the end of the same month, and 78° in the middle of May. The young Whales are generally in advance, the older animals—especially the males—lagging behind.

(To be continued.)

ORNITHOLOGICAL NOTES FROM THE NORFOLK COAST.

By Oliver V. Aplin.

Having, with my brothers Mr. F. C. and the Rev. B. D'O. Aplin, spent a few days (Sept 17th to 26th) at Cley, on the Norfolk coast, I send you some notes on the birds which we met with.

Our visit being paid some seventeen days earlier than last year (October 4th to 15th), it was interesting to note the difference in the avifauna of the marsh, which on this occasion partook more of a summer, or early autumn, than a winter nature.

The following summer visitors, or early migrants, unseen last year, were noticed:—Redstart, Willow Wren, Tree Pipit, Ray's Wagtail, Common Sandpiper, Little Stint, Whimbrel, and Common Tern; while Wheatears, Pigmy Curlews, Godwit and Turnstones were decidedly more numerous. Swallows and Martins were present in varying numbers each day, but I could not detect any migratory movement taking place. On the other hand, Rock Pipits, Grey Crows, and Twites, seen last year on October 4th and 5th, did not put in an appearance; the place of the second being taken by some Black Crows in the marsh on the 17th, the first I had seen in North Norfolk.

News having reached us of the capture of a Bluethroat and a Barred Warbler the week before our arrival, we sanguinely hoped to meet with some rare Warblers. But, owing possibly to the unfavourable quarter from which the wind blew during our stay, small birds (with the exception of a number of Willow Wrens one morning) were very scarce in the scrub. We were informed that a *north-west* wind was the most favourable for bringing in small birds, and during the time we were at Cley the wind was from E. to N.N.E.

Sept. 17.—Wind N.N.E., light. Walked down the marsh for a couple of hours. A Redstart in the scrub, and many Wheatears about the drier ground. Two Common Sandpipers on the mud edge, and another in the creeks. Big flock of Lapwings on the wing, and several Grey Plovers seen. Larks and Meadow Pipits numerous. A good many Black Crows* in the marsh.

Sept. 18.—Wind N.E., light. Two or three Redstarts in the scrub, and a great many Willow Wrens: of three of the latter shot, one was a large light-coloured bird, very yellow; the other two were small and colder in colour. Crows gone; fewer Wheatears; many Meadow Pipits. A Peregrine Falcon about the sand-hills, also a Merlin; the latter we watched for some time in pursuit of a Wheatear. A fair show of waders: four or five Whimbrel, Curlew, a good many Bar-tailed Godwit, Knot, Ringed Plover, one lot of Golden Plover, Grey Plover, two Ruff flying over, five Oystercatchers on the sands below Stiffkey "freshes," numerous Turnstones (as many as five together on the pebbly flats towards Stiffkey), three or four Curlew Sandpipers, Redshanks, Dunlin, a couple of Herons, and a big drove of Lapwings. Some Mallard about the harbour, and two Terns. A Stock Dove, was sitting on a squab, a few days old, and an addled egg in a hole in the sand-hills.

Sept. 19.—Wind N.E., moderate, fresher in afternoon; bright and hot. A Ray's Wagtail with some Pied Wagtails at the top of the marsh close to Cley. No Warblers in the scrub; a few Wheatears, and a little flock of Linnets. One or two bunches of Knot, and some odd birds: these must be the remains of the large flocks which arrived early in the season. Whimbrel pretty numerous, some Godwit, and a flock of fourteen or fifteen Curlew Sandpipers on the soft mud opposite Blakeney. Nine Sanderlings, unusually wild, on the sands at the Point. A Cormorant at the harbour mouth. A duck which passed our boat, flying up the harbour, and was knocked over by my brother, proved to be a drake Pintail, still in "eclipse" dress. As this duck, according to Mr. J. H. Gurney, jun., "is chiefly known at the present day as a winter visitant, and rather a scarce one" in Norfolk (Trans. Norfolk and Norwich Nat. Soc., vol. iv., p. 423), it may be worth mentioning that among some wildfowl received from Cley, on the

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* These possibly may have been young Rooks. The Carrion Crow (*Corvus corone*) is a rare bird in Norfolk.—Ed.

12th November, were two Pintails. I heard that a small flock of drakes put in an appearance there last March, and several were shot; two of these, which I saw stuffed, were in very fine plumage. A Greenshank was shot on the marsh to-day.

Sept. 20.—Wind due E., fresh in morning; bright and hot. A Robin in the scrub at evening. Fair-sized bunch of Knot, some Godwit and Whimbrel, six Herons, and a single Golden Plover, flying with a Redshank and a Dunlin, which came to call. Grey Plover numerous on the Aster-grown mud-flats between Blakeney and Morston creeks. The Pigmy Curlews again in the same place. Four Scaup, one an adult male, in Stiffkey freshes.

Sept. 21.—Wind E., light; bright and hot. A Redstart in the scrub, adult over the autumn moult; also a Reed Bunting. Some Wheatears; apparently a continuous flow of these, as they were seen in varying numbers all the time we were there. Peregrine seen again, and the Merlin, hard hit a day or two before, secured. A large flock of Dunlin and many Ringed Plover,—the first day that any numbers of either were seen; an adult of the former still retained the greater part of the black breast of summer. Five Little Stints on the mud-edge in the upper part of the channel. Some tame Turnstones on the pebble banks. All those examined were in the spotted dress of the young. A few Whimbrel; and eight Curlew, coming off the land, flying down the harbour at sundown. One bunch of Knot, and a party of fifteen Golden Plover. Still some Godwit. A Snipe at the mouth of Morston Creek. Four Common Terns playing about the harbour by the Watch-house. A flock of Gulls, many Greater Black-backed ones among them. A Wigeon was shot to-day.

Sept. 22.—Wind E.N.E., light; dull morning, becoming brighter later in the day. Not many waders about. One Tern in the harbour. As we ran up to Cley, on the late tide, a beautiful calm grey evening, a Ruff passed overhead, uttering its sharp clear whistle, *fu-whit*.

Sept. 23.—Wind E.N.E., light; thick haze and falling mist. Visited, by kind permission of the owner, the fields frequented by the Sand Grouse, and saw three.

Sept. 24.—Wind E.N.E., backing to N.E., light to fresh in afternoon; some local showers at mid-day. Two Kestrels round the ricks inside the beach, which moved off eastwards along the coast. Put out to sea about a mile and a half in the morning, and fell in with a school of porpoises. A short distance from land two Golden Plovers came round the boat from seawards, and when about half a mile off, parties of four and six Larks and a Wheatear passed us, travelling steadily S.S.W. Several small lots of Scoter, and some half-a-dozen Divers (apparently Red-throated), singly, flying E., at perhaps a mile from shore. Six Mallard and four Teal were also flying towards the land. A couple of tame Golden Plovers which my brother fell in with on the beach in the afternoon, and some Teal flushed from the creeks, were probably those seen coming in in the morning. A few Black Crows on Salthouse banks. One Whimbrel seen. Strong wind at night, and heavy rain up to 6 o'clock next morning.

Sept. 25.—Wind N.E., strong and cold in morning, dropping later. Evidently a small immigration of ducks, thrushes, and some small birds last night. Two Song Thrushes and a Blackbird in the scrub, which was not beaten until late in the afternoon; also some large Pipits, which rose silently, and proved to be *A. trivialis.* A single old Snow Bunting on the beach, rather an early arrival; also some Wheatears and Larks. A good bunch of Knots on the mud, and a few odd birds. Many waders in the marsh between Morston and Blakeney creeks; Grey Plover numerous, two or three Godwits, and a Ruff. The last-named, on rising from the mud, settled far out on the sands near the channel, where it was put up by a passing boat while I was endeavouring to creep up to it, and, though it came round to the call, would not come down. Two more Greenshanks were shot on the marsh to-day. A bunch of eleven Wigeon, also two and three, about the harbour; two Teal came off the sea in the afternoon.

Sept. 26.—Bright and hot. Down to the beach before breakfast. Many Meadow Pipits in the marsh, and several little parties of Larks on the beach, inclined to move eastwards along the coast.

A Honey Buzzard in the first year's plumage, now in Mr. F. C. Aplin's collection, was shot at Thurgarton, near Cromer, on the 13th September last.

ORNITHOLOGICAL NOTES FROM NORFOLK.

By J. H. Gurney, Jun., F. L. S., F. Z. S.,
President of the Norwich Naturalists' Society.

In sending you a first instalment of Notes for 1888, from the county with which the name of Henry Stevenson has been so long associated, I cannot refrain from adding my personal tribute to his attainments as an ornithologist. He had a genuine love of Nature, and as one of the pioneers of the Norwich Naturalists' Society he helped to imbue many residents in this county with a taste for Natural History and outdoor observation. The influence exerted through his writings, however, was felt far beyond his own county, and readers of 'The Zoologist' especially will miss his periodical contributions to the pages of this widely-read Journal.

In compliance with the editorial request for information concerning the reported breeding of the Green Sandpiper in Norfolk (Zool. 1888, p. 306) I communicated with Mr. W. E. Baker, who readily answered all my queries, but nothing more was elicited than has already been furnished by Col. Butler, and the matter must therefore remain doubtful, since nobody saw the nest referred to, and the young Sandpiper which Mr. Baker thought was only a few hours old, might have been the young of some other species.

January, prevailing wind W. and E. Some Wood Pigeons nest very late: I have a note of shooting a young one, which still retained some of the yellow filaments, as late as December 23rd, only about two-thirds grown, and remember seeing another in November which had just left the nest, and could do no more than flutter. Among some Wood Pigeons taken out of a net on January 17th last was one in immature plumage. Wood Pigeons may be taken with acorns soaked in *Cocculus indicus*: although ranked as a poison, it is used by brewers, and pigeons which have been killed with it are none the worse for eating. Acorns soaked in spirit have no effect at all, the Wood Pigeons eating them with avidity, and evidently without the slightest ill effects. The best way of obtaining them is by lying in wait for them in the plantations, and shooting them as they come into roost: on January 24th forty birds were obtained in this way by one gun, in a small plantation at Keswick, but a repetition of this once or twice makes them shy.

There is no more favourite locality in Norfolk for the Great Crested Grebe than Ranworth Broad, from which, however, it is always absent in winter. On Feb. 23rd there was not one to be seen there, and apparently these birds do not return before March. This is a favourite broad also for ducks. The annual visits of the Tufted Duck in March have been before alluded to (Zool. 1881, p. 330), but they are to be found all through February. On Feb. 23rd a flock of about twenty-five allowed themselves to be driven over a neck of land, when a volley from our barrels accounted for four of them, after which the others left the broad.

On Feb. 29th two male Cirl Buntings were netted on Breydon marshes; snow on the ground, and 17 degrees of frost that night, indicating that they were fresh arrivals, most likely from the interior. Mr. Pycraft exhibited them a few days later, while still in the flesh, at a meeting of the Norwich Naturalists' Society. The Cirl Bunting is rare in Norfolk; an example, hitherto unrecorded, was seen some years ago at Hempstead, by Messrs. Farn and Standen. Yet, so far as is known, this and Mr. Pycraft's pair bring up the number of authentic occurrences to five only.

On March 5th, Mr. Smith wrote, "the Wigeon at Yarmouth were leading off to sea in huge numbers," and the next day the frost broke up. On the 12th there were over five hundred Wigeon on Breydon Broad, three Pintails, two Wild Swans, and a Scoter. Few remembered such a continuance of severe weather, which affected all kinds of animals by cutting off the food supplies.

On the 7th six Scoters were offered for sale in Norwich Market,—an unusual sight. Scoters have been either more numerous or more sought after than for some years, in fact since 1870. They were abundant during the winter in the Wash, where sixty-two were shot off Hunstanton, on November 17th, by one gun. Mr. Tuck has remarked on their abundance at this place (Zool. 1888, p. 148), where the practice is to anchor wooden decoys on a still day, and shoot the Scoters when they come to them. Velvet Ducks and Long-tails also fall victims, and a good many of both were obtained last winter, as I learn from correspondents on the coast. At Hickling five Pintails were reported on the 18th, five

Sheld-ducks on the 20th, and six Shovellers on the 22nd, by Joshua Nudd.

During the greater part of February and March we had snow on the ground. Prior to this there had not been more than one or two Fieldfares in the parish of Keswick, but simultaneously with the snow they appeared. The largest flock, consisting of at least sixty, settled on a grass field which had been lately used for ewes, where a good many Swede turnips, mostly entire and quite uneaten, had been left. Into these they at once proceeded to drill holes, selecting any soft or rotten spot there might be to begin upon. For five weeks these poor birds fed on nothing else, and, from having been plump and shy, they soon became tame and thin, dropping in weight to 2¼ oz., and Redwings to 1½ oz. When the snow cleared away, around each Swede turnip might be seen a circle of the flakes they had pecked off, and really it was incredible how much they had got off, many of the turnips being reduced to mere shells. Nor was any of this damage done by Wood Pigeons, which prefer turnips growing in a field where they can settle in a flock in the middle of the ridges. Here they peck holes, and let in the frost, doing more harm in this respect than the Fieldfares. At Northrepps the Partridges attacked the broccoli which was just above the snow, and took the hearts completely out of some—a charge I do not remember to have heard brought against them before, though I believe Wood Pigeons are guilty of it. Some of the hungriest Rooks fed with my Chinese Geese, eating maize, and even scraps of bread and potato; and a Hooded Crow was so intent on enjoying a meal on a large mussel, on Brancaster beach, that he got caught by the beak and was made a prisoner! As usual during severe frost, Dabchicks had a hard time of it, and sometimes four or five were to be seen at Harford Bridge, below which the Yare widens a little, making the most of the water while they had it. A Puffin and a Guillemot, probably starved, were washed up at Overstrand.

On March 19th 2000 Canaries were sent from Norwich to the United States, notwithstanding the bad weather, when many would most likely die on the voyage, New York being snowed up about that time. This is what a Norwich writer says about them:—"Although the weather was piercingly cold [and a bitter *east* wind] while the waggon-load of live stock was being conveyed to the station, the singing from the birds could be heard in the streets at a considerable distance. So great has been the demand for our Norwich Canaries this season, that we learn over 14,000 have left the hands of Messrs. Mackley, since October last, for America alone, having consumed about £100 worth of seed, eggs, and Cayenne pepper." Many of our Norwich Canaries are most beautifully coloured, and the prices put upon them are quite astonishing: unfortunately, owing to the artificial system of feeding necessary to attain their bright hue, the number which die before they have fully attained it is very large. Moreover, it is said that if they are exported in warm weather they lose much of their voice and plumage, and are consequently less saleable. The Germans import a considerable number into New York, which it is said are bred in the Hartz Mountains, and sing much better than English ones.

In April the prevailing direction of the wind was N.E. On the 2nd, notwithstanding the provision of the Sea-Birds Preservation Act, a Little Gull, with a pure black head, was shot at Hickling; all the white part of its plumage was richly suffused with roseate, extending even to the tail. On the 6th an old male Goldeneye appeared on Fritton Lake, which, though in Suffolk, belongs geographically to Norfolk, and, though keeping by himself apart from the other fowl was tamer, than any of them, and I got a very good look at him. This famous lake has long been noted for its decoys, and is one of the few places in England where they may still be seen at work, but not many kinds besides Duck and Teal are taken. The lake is 2½ miles long, with an average width of 300 yards. Two decoys are worked, one by Sir Savile Crossley, the other by Col. Butler.

The take of wildfowl at Sir Savile Crossley's during the winter, as supplied by Mr. Southwell, is as follows:—

		Duck.	Teal.	Wigeon.	Shoveller.
October, 1887	....	41	17	0	0
November, ,,	....	198	14	0	0
December, ,,	...	176	2	0	1
January, 1888	....	121	2	2	0
February, ,,	....	133	0	0	0
March, ,,	....	6	1	5	0
Total	....	675	66	7	1

This falls very short of the total which was reached in the season of 1884-5, an exceptionally good winter, when 2056 fowl were captured. In Colonel Butler's decoy on the south-west side of the lake, where no decoy-dog is used, sixty-one Ducks and Mallards, and two Wigeons, were taken. The decoy-men consider that the Wigeon remained later than usual last spring, or rather appeared on passage later. Although we only observed one, Col. Butler saw a hundred on April 9th within gun-shot of the bank. On April 19th a Water Rail, *Rallus aquaticus*, was picked up on the shore at Overstrand, and a Buzzard was seen at Northrepps. On the 23rd a Black Stork, *Ciconia nigra*, retaining a few immature feathers on the breast, but otherwise adult, was obtained at Salthouse. On the 24th two White Wagtails, *Motacilla alba*, were shot at Yarmouth, as already recorded (Zool. 1888, p. 229), the first authenticated examples killed in Norfolk.

In May the prevailing direction of the wind was W. and N. On the 1st an adult male White Wagtail was brought to Mr. Pycraft from the River Bure, near Yarmouth, the light grey colour extending over the whole of the back to the root of the tail. On the 9th a Dotterel, *Eudromias morinellus*, was picked up under the telegraph-wires at Northrepps, and taken to my father, with whom it became wonderfully tame, eating worms greedily, but lived only ten days after capture. On the 16th a Greenshank, *Totanus glottis*, was picked up dead at Scoulton, thirty miles from the sea. On the 20th an adult male Honey Buzzard, *Pernis apivorus*, was brought to my father from Thorpe Market, probably the same bird which had been seen by the keeper at Northrepps the day before. Grey-cheeked adult birds of this species are not common. On the 29th a female Montagu's Harrier, *Circus cineraceus*, was shot on Kelling Heath, and three days afterwards the male was massacred: they probably had a nest, for when Mr. Pashley skinned the hen bird he found an egg, full size, ready for exclusion. A few days afterwards another female of this species was brought into Norwich, as I learn from Mr. Southwell; this bird also contained an egg with the shell formed. These Harriers would nest regularly in many places if permitted. A pair bred at or near Ranworth, and the young in this case were reared, with one exception. On the 29th a female Crane was shot at Halvergate, near Yarmouth, and mounted by Mr. Pycraft, who found that it turned the scale at 7 lbs. 7 oz. I did not see it until it was set up, but it struck me as being rather a small bird: some years ago I weighed one, which was shot in Lincolnshire, and it turned the scale at 11 lbs. 2 oz.

ON THE HABITS OF THE GREAT CRESTED GREBE, *PODICEPS CRISTATUS.*

By C. R. Gawen, F.Z.S.

The breeding places of this interesting bird in Britain are, I believe, from their size and surroundings, rather unfavourable to the acquirement of minuter details respecting their breeding habits. Having been favoured by circumstances which rendered observation easy, I think the following notes on the habits of this species may, perhaps, be interesting to readers of 'The Zoologist.'

A pool on which a pair of Great Crested Grebes has, for the past two years nested, is about twenty-five acres in extent; as there is no marginal growth of reeds or sedges, the surface is open and exposed, insomuch that by hiding behind a tree, or even by remaining motionless on the open bank, I have, with the aid of a pair of binoculars, been able to witness much that was interesting in the domestic life of these birds.

For many years previous to 1887, a solitary Great Crested Grebe had made its appearance upon this pool in spring, but made no long stay, owing, I believe, to the presence with his harem of that persistent bully, the domestic gander.

In April, 1887 (the geese having been exiled), two Grebes came to our pool; the male arriving on the 7th of that month, the female ten days later on the 17th. These birds were not, presumably, already paired, and they occupied their time chiefly in courtship; not finally deciding upon a nesting-site until May 17th, nor laying eggs until the second week in June. A nest was begun earlier than this, but abandoned for some reason or other.

During the period of courtship, the Grebes were seldom far apart from each other; their favourite mode of flirtation or salutation consisted in facing one another at a distance of one or two feet, and shaking their crested heads rapidly from side to side. Viewed from behind, this pretty gesture had the appearance of the birds sparring or fencing with their bills. Once, when I suppose they were at play, I saw both dive, and presently re-appear simultaneously, breast to breast, the splash of their impact being distinctly audible at some little distance.

After a while, a strange male disturbed their honeymoon, and was persistently chased hither and thither by the bird in possession, who was stimulated to doughty deeds by the constantly repeated and duck-like "kek, kek," of his mate. Having endured persecution for several days, the rival departed; I saw no actual collision between him and the paired bird, whose warlike operations seemed to be singularly futile.

In 1888, the first Grebe appeared on the 18th, and the second on the 25th of March. No preliminary courtship took place, nidification commenced about the 1st of April, and the first egg was laid on the 13th of the same month. So far as I could judge, the nest was built in exactly the same place as in 1887. This, with the absence of courtship in 1888, renders it probable that these birds pair for life, or at any rate for more than one season.

The situation chosen for the nest was the edge of a patch of lake weed, within twenty feet or so of a small island; in neither year was a second, or look-out platform made, that purpose being served, perhaps, by the island or some alder-roots out-growing from it. Except on the side covered by the island, the nest, with the sitting bird, was perfectly visible from the water's edge; indeed, the lake weed in 1888 did not attain its full growth until after the young had been hatched. It is possible that, being new to the place, and fearful of being disturbed, the Grebes in 1887 waited for the growth of the weed before they seriously began to build.

The nest was a solid structure, composed chiefly of dead sticks and stalks of lakeweed, with dead leaves, and a few old flower vessels of the Spanish chestnut. Both sexes took part in nidification, the male while I watched them being the more energetic of the pair. He would bring stalks of weed in quick succession, and, laying them on the side of the nest, leave the female to arrange them. But he not only performed what I may call mere manual labour; I have also observed him assist his mate in shaping the nest, going round and round it, pushing here and tugging there, until the result was satisfactory. Once he amused me much by his frantic and ultimately successful efforts to bring in a large stick as part of the structure—a stick so long that he had to push it in front of him to the nest. While bringing nesting materials, the Grebes swam very low in the water, very swiftly, and with necks much outstretched. When they wished to get up to the nest, they would go close to it so that they leaned, or appeared to lean, against it, and then jumped on as easily as may be. For a moment or two an upright position would be maintained, in which the bird looked very comical.

Incubation also was shared by both sexes. I have repeatedly seen the male performing this duty while the female has been occupied in fishing, or preening herself in another part of the pool. On one occasion, I watched the male jump upon the nest which his mate had left, and remain there for over an hour, not even vacating his post when she returned to the vicinity of the nest. Usually, when the female Grebe (the shyest of the pair), in alarm at being watched, slipped off the nest, hastily and imperfectly covering the eggs, the male, after carefully covering them, would take her place. I have observed him dive several times for leaves with which to cover the eggs. Whether the female removed the covering I am unable to say; her mate certainly incubated the eggs while covered up.

Incubation commenced at once. Thus on April 13th, 1888, the first egg was laid, and on that day I observed the female sitting. On May 21st, I saw one or more young; but as I had been absent from home, the one I actually saw may have been hatched some time; from its small size it could not have been more than a week old. According to this, incubation probably lasts twenty-eight days or thirty-five at the outside.

The young was at first assiduously cared for by both parents, but after it was half-grown, the old male ceased to pay it any attention, frequented another part of the water, and was often absent altogether. For some time after it was hatched, the favourite seat of the little bird was its mother's back, usually partially concealed by her scapulars, not unfrequently quite exposed to view. When rather more than three parts grown it used to catch fish for itself. The old Grebes would always shake the fish carefully before presenting it to the young, and I have seen the latter decline to take it until it had been shaken a little more. But with old or young Grebes, the direction, "before taken to be well shaken," seems to be carefully followed.

Although these Grebes incubated two eggs (having laid three) in 1887, and three (out of four) in 1888, they only succeeded in rearing one young bird each year. The presence in the pool of a number of large pike probably accounts for their ill success in this respect. The Great Crested Grebe has a variety of notes; one of these, the alarm-note as I think, which is most frequently uttered at dusk, is rather crow-like, and, to my ear, is well syllabled by Mr. Seebohm as "*croix*." Before incubation, the birds constantly utter a monotonous call-note, which resembles "kek," or "chek"; this note is sometimes repeated at the nest very rapidly and loudly, so that it then becomes a chatter analogous to the cry of the Dabchick. Lastly, there is the sonorous love-note of the male, which is, I think, an amplification of the note "*croix;*" and which, to my ear, resembles the syllables, "Gaw-oo-oorr," pronounced while drawing in the breath, and with the final R well rattled. In uttering this peculiar cry the Grebe erects his crest and tippet, and inflates his œsophagus, presenting to human eyes a very ludicrous appearance. I believe that this note is confined to the male bird. The young bird utters a plaintive, cheeping note.

No bird of my acquaintance preens itself so assiduously and frequently as the Great Crested Grebe, and this even when incubation is not going on.* I have often wondered whether this habit is to be attributed to personal vanity or to the presence of parasites. Sitting upon a wet nest is, of course, a very dirtying occupation, and it is amusing to watch the bird after a spell of it, lie on its side, in order better to preen the feathers that have been spoiled by the nest, and turn slowly round like a teetotum on the axis of the leg which remains in the water. The head and upper neck are kept in order by the feet, towards which they are bent backward along the centre of the back, the tarsus being turned upward, apparently over the back in a forward direction. Sometimes this bird gives its leg an indescribable flourish along or over the back, and almost at right angles to the line of the body, a feat which it requires an acrobat to explain.

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* We have several times found in the stomachs of Grebes which we have dissected (*i.e.* in *P. cristatus*, *rubricollis*, and *auritus*) agglutinated oval masses of their own feathers, evidently swallowed during the process of preening, and similar to the well-known pellets ejected by hawks and owls. These, in all probability, would have been cast up in due time had the birds not been shot.—ED.

These Grebes appear to rest a good deal during the daytime, either tucking their heads away in the scapular feathers, or inserting them up to the forehead in the feathers of the upper breast. While they are thus resting, a strong breeze will often bring them close in to the banks. The colour of their backs is wonderfully protective, and when there is a ripple, the birds are almost invisible, unless a glimpse is caught of their white satin breasts.

The Great Crested Grebe is one of the most ornamental of water-fowl; and also, what so many gaily-coloured ducks are not, a most interesting and amusing bird to watch. At the same time, although three fish running is the most I have seen them take, one would rather be excused from having a pair on a pond which contained yearling trout, or other valuable fish of small size.

NOTES AND QUERIES.

Natural History Notes on Board Ship.—On my recent voyage home from America, in the White Star Liner 'Germanic,' an unusual number of small land birds came on board. The weather was cold, the average temperature of the day being only 43½ degrees, or no less than 25 degrees colder than on the corresponding day last year, and there was a strong north-west wind blowing. On the 10th of October we left the wharf at 8.30 a.m. It was fine and clear, but rather cold, with a light westerly breeze. We were out of sight of land soon after noon. There were no sea-birds of any kind to be seen. A Cedar Waxwing, *Ampelis cedrorum*, and an English Sparrow were flying about the vessel till dark. Whilst the sun was strong, an Archippus butterfly, *Danais Archippus*, was sailing lazily about the deck, cleverly avoiding its would-be captors; it was bright and fresh, and apparently not long evolved. This butterfly is a strong flyer, and may often be seen soaring about in the air, a hundred feet from the ground, even in the midst of violent rain-storms, in California in winter. No doubt it has often been introduced to Europe by the agency of the mail steamers. Next day, the 11th, there were hundreds of small birds round the vessel. The air seemed full of them, and they appeared flying to the vessel from all quarters. I distinguished amongst them the Golden-crested Wren, *Regulus satrapa*, Yellow-rumped Warbler, *Dendrœca coro-*

nata, and Snow Bird, *Juncus hiemalis*, in numbers; and several Yellow Warblers, *Dendræca æstiva*, and White-throated Crested Sparrows, *Zonotrichia albicollis*. There was also one Carolina Nuthatch, *Sitta Carolinensis*, climbing about the boats; a large entirely brown Grosbeak; and a black and orange Warbler like *Dendræca Blackburniæ*. Many of these birds were so tame that they pitched fearlessly on the heads and shoulders of the passengers on deck; they seemed almost perishing with cold and hunger. The only sea-birds seen were a Petrel and a Gull. At noon we were 378 miles from Sandy Hook. The wind was north to north-west, and the weather was fine and clear in the early morning but cloudy afterwards, the breeze freshening in the evening. On the 12th only one or two birds were about the vessel. One, I think, was a *Liurus auricapillus*. At noon we were 734 miles from Sandy Hook, in lat. 42° 27′ N. and long. 58° 04′ W. After this no more land-birds and extremely few sea-birds were observed till we reached Queenstown, on the morning of the 18th, when we were soon surrounded by the usual crowd of Kittiwakes, and Black-headed, Common, and Herring Gulls. At this place, on the 23rd of February last, on the outward voyage, I saw two individuals of the Little Gull hovering about the screw-steamer 'Republic,' with the other commoner species. The first Dolphins seen on the voyage home were about 300 miles from Ireland.—W. S. M. D'URBAN (10, Claremont Terrace, Exmouth).

MAMMALIA.

Badgers and Otters in Surrey.—In the last week of October the "Old Surrey" hounds ran into, and unfortunately killed, before it could be rescued from them, a full-grown Badger. Ockley Wood, the scene of this catastrophe, used in former days to be a favourite resort for Badgers, and the older residents have many stories of moonlight Badger-hunts there, as well as of Badger-baitings in the neighbourhood. In a house near here there is a stuffed white Badger which was killed forty years ago in Ockley Wood. I hardly think that the animal lately killed by the hounds could have been a descendant of the former inhabitants of the wood, as the last few years have seen the springing up of so many houses in the neighbourhood as to render it unlikely for the Badger to have remained with us. It may have been a wanderer from a distant and less inhabited part of the county, or it may have been one recently turned down. In the spring of this year a half-grown male Badger was trapped in Gatton Park, but this was thought to have strayed from a neighbouring park where a pair (one of which was afterwards found dead) had been turned out. The animal lately killed, being full grown in October, could not, I suppose, have been the same animal which weighed 15 lbs. (I weighed it myself) in April. About four years ago a male Otter met with his death at Betchworth, about four miles from here, by being run over by a train: the body of this Otter, frightfully mangled, was brought f[illegible] a local bird-stuffer, who purchased it and set it up; its weig[illegible].—E. P. Larken (Gatton Tower, Reigate).

The Acclimatisation of Red-deer [illegible] Zealand.—Judging by the distance Englishmen travel to obtain [illegible] think it would be worth while to draw the attention of sportsmen to the New Zealand Red-deer, now thoroughly acclimatised on the Nelson Hills—indeed, so numerous, that an open season is annually proclaimed by the Acclimatisation Society—this year extending from February 18th to the end of March—free to all on payment of a license fee of £1. By way of explanation, I may mention that to the north and east of Nelson, a wide area of bush-fern and grass-hills extend for some forty miles in either direction; these contain many open valleys, glades, perpetual streams, and several small rivers. This wide track is now stocked with deer, and lately has been made more accessible by a good coach-road, which passes one or more village settlements, where comfortable accommodation can be obtained. Here, in the loveliest and most invigorating of weather—the end of the New Zealand summer and the commencement of autumn—the sportsman can stalk deer to his heart's content, thoroughly enjoy life, live with comfort in a cotton tent, and eat, if so disposed the products of his gun. The history of the Nelson deer does not extend far back. Somewhere about 1850 the Hon. Mr. Peters—then a Nelson settler—presented a pair to the province. These were turned out in an adjoining valley which forms the source of the river passing through the town, and called, like the valley, the Maitai. Here for some time they remained undisturbed until a too-keen sportsman, evidently intent on again tasting venison, cruelly stalked one, leaving the survivor unmated. His Royal Highness Prince Albert, hearing of the matter, kindly sent out a second pair. These were turned out in the same valley, and within a few years had increased and multiplied so that travellers reported seeing young deer. This was eventually corroborated in the most indisputable way, by predatory visits from herds of deer into the adjacent gardens, and causing no small discomfiture to the owners. With their rapid increase and constantly renewed depredations, the settlers commenced driving them back, and so persistently, that they were eventually distributed over an area equal in extent to the half of Scotland, now offering good sport fo[illegible] re guns than are likely to be brought to New Zealand in the present century. The deer are not only numerous, but large in size, often weighing, when cleaned, 4 cwt. One of my sons shot his first stag, which drew the scale at 4¼ cwt.—H. B. Huddleston, C.E. (Blenheim, Marlborough, N. Z.).

BIRDS.

Food of the Manx Shearwater.—With reference to Mr. H. A. Macpherson's note (Zool. 1888, p. 470), I should like to say that if, however unintentionally, I drew an inference from his words which was likely to mislead, I much regret it. What I wish to express was the opinion that his observations as worded in his article (pp. 373, 374) did not, as he claimed, suffice to establish as a fact that the Manx Shearwater feeds largely on shoals of fish. As to the power of the bill in this species, I would ask whether the Manx Shearwater is known to burrow, as does the Sand Martin, in strata harder than loose dry soil or vegetable mould, and, if this be so, whether it follows that the bill is strong *quoad* grasping struggling fish? In Mr. Warren's interesting and conclusive note (*tom. cit.* p. 470) there is one point which perhaps he would kindly clear [illegible] I refer to the possibility that the sprats disgorged by his Shearwater may, as well as the entrails, have been thrown from one of the fishing-boats to which he alludes, and thereby have become offal, as I understand the word. It is remarkable that, with the thousands of fishes in the sea, the hundreds of Manx Shearwaters flying, as they must do, within a few feet of the sea, and the scores of human eyes which have watched with keen attention the movements of these birds, no one seems to have seen, or recorded that he has seen, a Manx Shearwater actually catch and swallow a fish.—C. R. GAWEN (Chetwynd Park, Newport, Salop).

Little Gull in Glamorganshire.—I am glad to report another addition to the avifauna of this county, *i. e.* the Little Gull, *Larus minutus*, an example of which was shot, on the 30th November last, near the Low Water Pier, at Cardiff. Mr. Storrie, the Curator of the Cardiff Museum, who informed me of the occurrence, states that it was one of a small flock of eight which had been seen about Penarth as well as near the pier-head at Cardiff. The example obtained is a male in full plumage, and Mr. Storrie has succeeded in securing it for the Cardiff Museum.—DIGBY S. W. NICHOLL (The Ham, Cowbridge).

The Diving Powers of Gannets.—Can any of your readers furnish me with a few reliable particulars of the depth to which Gannets dive for their food? In Thompson's 'Natural History of Ireland' are some extraordinary accounts of the depth from which Gannets have been brought up in nets. He states that Gannets are "very commonly" caught in nets sunk from "nine to twenty, but sometimes to the depth of thirty fathoms (not feet!), just as the fish (herrings) are lying." He also mentions that one hundred and twenty-eight Gannets were caught in one net, and such was the buoyancy of their numbers that they raised the net, with its "sinkers and fish," to the surface. Does the Gannet dive obliquely or perpendicularly? Thompson states that "intelligent" fishermen regulate the depth of their nets according to the height from which they see the Gannets diving. Does the bird seize only one fish in its dive, or does it follow up the fish in the water and take several before coming to the surface?—J. L. COLLISON-MORLEY.

Nesting Habits of the Black-eyebrowed and Wandering Albatrosses.—The following particulars, forwarded by Mr. J. L. Collison-Morley, are extracted from an account sent to the 'Southland Times' of New Zealand by Mr. W. Dougall. Every six months the New Zealand Government send a steamer to the following uninhabited South Pacific Islands,—Stewart, Snares, Auckland, Campbell, Antipodes, and Bounty Islands, the last-named 415 miles south-east of New Zealand,—to overhaul and replenish food depôts maintained for those who may unfortunately be shipwrecked upon them, and the observations given below were made by Mr. W. Dougall when accompanying one of these trips, chiefly to take photographs on these islands:—"Returning to Monumental Head (Auckland Island), we picked up our hunters, laden with Albatrosses (*Diomedea melanophrys* and *D. exulans*), living and dead, and Albatross eggs in abundance. I ascended one of the highest hills, Mount Honey, 1866 feet (Campbell Island), amidst hundreds of nests of the Wandering Albatross, *Diomedea exulans*, surrounded by tussocks, ferns and ti-tree scrub. We came on the first Albatross at about 800 feet above sea-level, and after reaching the crown of the hill, 1000 feet, they were sitting on their nests, and flying about close to the ground in hundreds. Apparently the Albatross lays but one egg each year, but one of the parties found two nests containing two eggs each. It was suggested that this was only a freak of nature, although it is known that the Gannet of New Zealand lays two eggs. All up the sides of the hills wild parsley was growing luxuriantly, often two feet high, while everlasting daisies clothed the ground like a carpet. The cotton-wood plant, in full bloom, was also plentiful. As the top—1866 feet—is reached, variety of vegetation ends, and travelling becomes easier, as there is no growth to impede progress, but diminutive tussocks, among which are the Albatross-nests and their tenants. These nests are built up of moss and earth about four inches above the surface of the ground. The material to form the nest is so taken from the soil as to leave a trench all round it, and this keeps things dry for the important object in view. The female never leaves the nest during incubation, a period of about sixty days, and is fed by her mate, who hunts for food for both. If by chance the nest is left unguarded for a moment, the egg is pounced upon by the Sea-hawk (*Lestris*), which is here in thousands. The Albatross is a stupid bird; it will sit, whether hatching or not, till you kick it over with your foot. Nevertheless it will resent such liberties, and should it succeed in getting a hold, it will take the piece out of trousers, hose, and skin. The best way to catch one is to make a feint at its head with the left hand, which distracts the bird's attention, and then quickly seize it by the bill with the right; but be sure you got the grip, for they turn very quickly, and would snap your fingers off if they get a proper hold. They build on the flat plateau of the hills, and, so far as we have seen, never lower down than 700 feet from sea-level. The hatching was much farther advanced than at the Auckland Islands. On January 31st the day broke beautifully, and the bay was like a mirror, but the glass was still low. As the day advanced, we were enveloped for half-an-hour in one of those dense mists characteristic of this part of the world, and when it passed, the hills were covered with snow. The height of the island (Antipodes) is marked on the chart at 600 feet; but this is an error, as the principal hill, Mount Galloway, is 1200 feet above the sea level. From seaward this hill looks conical or dome-shaped, but on reaching the summit a beautiful clear lake, covering an area of thirteen or fourteen acres, is found—a lake which, a little later in the season than the time of our visit, is much frequented by the Albatross, being virtually surrounded by thousands of their nests. We moved on northwards (Stewart Island), and came on a perfect cemetery of dead Penguins lying rotting amidst black sand—thousands upon thousands—evidently cut off by some epidemic."

Birds in the London Parks.—It is a pleasure to be able to report the increase of any wild bird in the London Parks, as has been done by Mr. W. H. Tuck in 'The Zoologist' for October last (p. 389). I can corroborate his remarks regarding the Wood Pigeon in several particulars. I noticed the coming of the first pair some five years ago, and have watched their gradual increase up to the present year, when about ten pairs must have bred. One pair had two nests in an elm tree in St. James's Park, close to Birdcage Walk. The first pair that came to town made their nest in Buckingham Palace Gardens, in a chestnut tree overhanging Grosvenor Road. I have often seen from forty to fifty feeding on the lawn to the north of Rotten Row; but I was both astonished and delighted one day to count no less than sixty on the ground at one time. Since then the bulk have gone out of town for the winter, but a few may be seen about, more particularly in St. James's Park. Let us hope that their immunity from danger in London may not be followed by their destruction in the country, and that they may return in the spring to breed again in the Metropolis. On the other hand, I am sorry to have to report the decrease or disappearance of other interesting species. In the first place, the Rook—so common twenty years ago in the West End of London—is now all but extinct. I remember three rookeries in Kensington Gardens, one in Hyde Park, small ones in Mayfair and Marylebone Road, and a substantial one in Holland Park, all of which are now things of the past. The only rookery I was able to find in the West End last summer was one consisting of five nests in Stanhope Place; only one of the five pairs, I believe, succeeded in rearing a brood. This is to be regretted; but the total disappearance of a colony of Martins which had defied the interruptions of the house-painters for many years past at the south end of Westbourne Terrace is equally to be deplored. Last, but not least, is to be noted the absence—for the first time during twenty-six years of almost daily acquaintance with Hyde Park and Kensington Gardens—of the Spotted Flycatcher. This bird has bred, I believe, in this neighbourhood every year, and in 1887 I saw a pair feeding their young in Cleveland Gardens, Hyde Park; but last summer I did not observe a single one. It is much to be regretted that more attention is not paid to the subject of attracting birds, in the mode of planting our public parks and gardens. I have no hesitation in saying that with the exercise of a little judgment and trouble, many pleasing songsters, such as the Nightingale, Blackcap, Whitethroat, and others which visit us on migration, might easily be induced to spend the summer in the parks. Some years ago a laurel plantation was made in Kensington Gardens, and during the summer the song of the Blackcap was always to be heard there; but the laurels disappeared one day, and I have not heard it since. A good nut-grove by the side of the Long Water would, I am quite sure, soon attract a pair of Nightingales; and what would be more delightful to Londoners than to sit and listen to the prince of songsters! The Lesser Whitethroat has on several occasions frequented Kensington Gardens and Hyde Park; and were suitable places available, the Common Whitethroat would sojourn here, as would also the Chiffchaff, Willow Wren, Wood Wren, and many other birds of like interest.—J. YOUNG (61, Hereford Road, Bayswater).

Rare Birds in the Isle of Wight.—I have to record the shooting, early in November, of a Greylag Goose, out of a flock of twelve that were met with on the coast near Blackgang. This species has not before been met with in the island. A Quail was shot in the Undercliff in November; whether any of these birds winter here is doubtful. Mr. Smith, the bird-stuffer, of Newport, informs me that he saw in June last a Blue-throated Warbler. This is the fifth recorded appearance of this rare bird in the island: two were observed, as announced at the time, at Bonchurch; one, an old male in perfect plumage and in full song; the other a young bird, the breast only partially blue; the third was seen at Shanklin; the fourth was shot at Steephill. Both this bird and the Hoopoe (which is to be met with here in most years) might probably breed in the Undercliff, if protected. Both Swallows and Martins are decreasing year by year, and few of either species now nest here; nor were many observed last summer in the North of England or in Wales. The Starling, now a common bird, was rarely met with sixty years ago in the Undercliff. I am informed by Mr. Henry Rogers, of Freshwater, that the following species have been procured there last autumn:—Pallas's Sand Grouse, Black Guillemot, Bulwer's Petrel, Glaucous Gull, Little Tern, and Sandwich Tern. Mr. Smith, of Newport, informs me that he has received the following birds for preservation:—On Jan. 14th, 1887, a Bohemian Waxwing; on the 18th, a Hawfinch; and on March 3d, a Rook, which, strange to say, is new to the island fauna; on April 26th, a Pied Flycatcher, and on the 30th another, bird of the same species. A Thick-knee, *Œdicnemus crepitans*, on April 28th, and another on Nov. 7th; two Dotterels, *Eudromias morinellus*, were brought in on Sept. 11th—the first seen during the twenty-eight years he has carried on the business of a birdstuffer; on Oct. 27th, a Great Grey Shrike, a Raven, and a cream-coloured Blackbird were received.—HENRY HADFIELD (Ventnor, Isle of Wight).

Notes on Birds in Norfolk and Cambridgeshire.—A short time ago, hearing of some "English wild Canaries" at a birdstuffer's at Saffron Walden, I went to see what they might be, and here give a description of them. One, which was living in a cage with some Redpolls and a Twite, looked almost exactly like a hen Siskin, except that it had a very short and stout beak, almost like that of a Bullfinch. A light yellow stripe over the eye was very conspicuous. This bird was caught near Saffron Walden. The others (there were two more) were stuffed, and the owner told me that one of them was caught near London, and had been living in the Zoo. This was a much more gaily-coloured bird than the living one. The forehead, throat, sides of neck just behind the auriculars, and breast being bright greenish yellow, with a few dark streaks on the flanks. The back was much greyer than a cock Siskin's, with dark streak down centre of each feather, getting yellowish green lower down, and tail-coverts the same colour as the back; top of head plain greyish green. I suppose they were cock and hen Serin Finch; but as I have never before seen a specimen of this bird, I am not certain about them. In June last I went to the same shop to see some Sand Grouse. The birdstuffer, Mr. Travis, had several in the flesh, two of which I saw weighed; the male was 11½ oz., and the female 11 oz., and they were both very fat. I cannot help thinking that, if they are not all killed, but are given a chance until next breeding season, they will have become so far acclimatised that they will certainly breed. While staying in Norfolk for the partridge season, we were continually hearing of Sand Grouse in the neighbourhood, and many were shot on the sand-hills. But we did not come across them until October 24th, when we saw a large flock of them get up from a field of white turnips, which afforded very thin cover. We were out partridge-hawking with a cast of tiercels, and had just got a covey marked down, and were proceeding to put up one of the tiercels, when these Sand Grouse got up, very wild, about 200 yards off. I should say that there were considerably over one hundred of them; they flew very fast, and kept rising and falling in deep undulating curves, at one time fifty feet up in the air, and anon shooting down and skimming close to the ground. They uttered a peculiar bubbling whistle. My friend Mr. T. J. Mann, with whom I was staying, had about this time acquired a pair alive, one of which was injured against telegraph-wires, and the other was shot, one pellet grazing the top of its head and stunning it. There were three found at the same time under the telegraph-wires, one being killed, and the other dying the same day. I was told the one which was found dead had its crop crammed with wheat. Mr. Mann's two birds were alive and well in November, the male bird in beautiful plumage; the female, unfortunately, has lost the use of one eye. They are fed on wheat, barley, hemp, millet, buckwheat, and turnip-seed. I have frequently heard these birds utter a very low clucking sort of a note. The cock bird is much tamer than the hen, which frequently rises and flies against the wire of their aviary on the too near approach of people. This I have never seen the cock bird do. One which I had recently sent to me in the flesh, had in its crop barley, wheat, and some seeds which I am not botanist enough to identify. The stomach was crammed with coarse grains of sand: this bird was very fat. Harking back to Mr. Travis's shop, I saw there, also, a fine male Golden Oriole, which was obtained in the parish of Elmdon. I heard that it was captured by some labourers who saw it striving to make headway against a strong wind. It was blown under the hedge, and they effected its capture. I saw, too, a good specimen of a Scops Owl, which was shot at Littlebury, in Essex, of which I read an interesting account in the 'Transactions of the Essex Field Club' (1888, p. 111). While rook-hawking in Cambridgeshire in the spring we came across a Kestrel's nest, or rather a Kestrel's egg, in a wheat-stack. The egg was placed in a good-sized hole under the thatching of the stack. (Last year we heard that six eggs of a Kestrel were found on a stack in the same place, while it was being thrashed). It was disturbed or destroyed soon after we saw it, and the old birds (probably the same ones, at any rate) laid in an old Rook's nest in a small clump of tall trees, about half a mile distant from the first site. I saw three fledged young ones outside the nest on June 26th. This part of the country is very bare and devoid of trees, but there are trees and woods within a mile of the stacks in every direction; so it is curious that the hawks should have chosen so unusual a place as a stack in which to lay their eggs. Kestrels are not the only hawks which hover; other hawks do so to a certain extent. A wild Peregrine-tiercel which we saw on several occasions in Norfolk, appeared one day over our garden, and there it hovered for a few seconds, exactly like a Kestrel. It was not more than about twenty yards from us, and we could plainly see its head, looking down and peering about on the ground underneath. Not many days after this I saw a wild Merlin hunting a Lark over the sand-hills. The hawk forced the lark to take the air until they were up a good height, the Lark ringing and the Merlin mounting much straighter, quickly flapping its wings the whole time. The Lark threw itself away very cleverly every time the Merlin stooped at it, and the Merlin never had any difficulty in getting above its quarry again after every unsuccessful stoop. At last the Lark made great haste down to the sand-hills, and, evading several more stoops of the Merlin, dropped like a stone among the long grass. The disappointed Merlin hovered for several seconds a few feet above the grass, looking in vain for its hiding quarry, and then was fain to fly off to seek a meal elsewhere. We heard of a large hawk in the neighbourhood, which had been seen eating a wasp's nest; this must evidently have been a Honey Buzzard. I saw the first Hooded Crow on October 3rd. Woodcocks seem to have come very sparingly to Norfolk this year; we heard of very few being about up to November; the wind during the greater part of October was more or less west, which may perhaps account for it. There was also at that date a great dearth of Snipe. Partridges in North Norfolk, as in most other places, came to grief at hatching time, many of the old hens succumbing to the inclement weather with their chicks. The consequence of this was that the majority of the birds bagged were old cocks. Needless to say, they were very wild. On one occasion, while out shooting, we saw two Partridges get up a dozen yards apart, and, converging to the same spot, come into collision. One bird fell a couple of feet, but recovering itself flew off all right. The sound of the collision was plainly audible.—G. E. Lodge (5, Verulam Buildings, Gray's Inn).

Golden Eagles in Co. Galway.—A large specimen of the Golden Eagle was killed by a gamekeeper of Mr. Mitchell Henry, Kylemore Castle, Co. Galway, during the month of October last. It measured seven feet three inches from tip to tip of expanded wings; three feet from tip of beak to end of tail; and weighed twelve pounds and a half. A second,—a male bird,—forwarded from the same district during the second week of November, is a much smaller bird.—Edward Williams (2, Dame Street, Dublin).

[It is very much to be regretted that protection is not afforded to these grand birds. Eagles are now becoming so scarce that we should have thought most people would be delighted to give orders for their preservation in districts where they still breed.—Ed.]

Rare Birds in Hants.—The gales of November last caused a great number of Geese and other wildfowl to take shelter in Christchurch Harbour. Amongst them were two birds of some interest. A curious variety of the Guillemot, *Lomvia troile*, which has all the upper plumage of a very pale isabelline, the primaries very light, legs and toes pale yellow; bill light horn-colour. On the 10th of November, a male Osprey, *Pandion haliaëtus*: length, 24 in.; alar extent, 5 ft. 6½ in. One cannot but regret that this bird should have been killed, its visits not being so frequent as formerly. The examples procured are invariably killed in the early morning as they come from their roost to the water; always taking the same course each day, the gunners soon know where to lie in wait. They either select the trees at High Cliff, or those on Ramsdown Hill as their roosting-place.—Edward Hart (Christchurch).

Surf Scoter in Ireland.—Mr. George Dunleavy, light-keeper of the Fastnet Rock Lighthouse, shot a duck on Nov. 5th in Crookhaven Harbour, Co. Cork, and forwarded it to me. It proves to be a Surf Scoter, *Œdemia perspicillata*, and I think a young male; but as I have been unable to compare it with any skin or stuffed specimen, it is possible it may be a female. The sex was not ascertained by the birdstuffer. Only two specimens have previously been recorded from Ireland:—one, an adult male, Belfast Bay, September 9th, 1846 (Thompson, vol. iii. p. 118). Another (sex not given), Clontarf, Co. Dublin, October, 1880 (Payne-Gallwey, 'Fowler in Ireland,' p. 113). The distinguishing features of the head in the various Scoters is well shown in Baird, Brewer, and Ridgeway's 'North-American Birds.'—Richard M. Barrington (Fassaroe, Bray, Co. Wicklow).

Nesting of the Hobby in Scotland.—Mr. Howard Saunders, in his 'Illustrated Manual of British Birds,' writing of the Hobby, states (p. 337) that "in Scotland it . . . . has never been known to nest." On the 29th August, 1887, I saw at Kinnaird House,—a small shooting belonging to the Duke of Athole on the right bank of the Tay, and about half-way between Dunkeld and Grandtully,—nailed to the keeper's "larder," an unfortunate old Hobby and three young ones nearly full-grown and fledged, but with the down still hanging on their heads and backs. The keeper told me he had got them that summer from a nest in a tree on the other side of the river, and on my remarking that they were not likely to kill his game, he answered he knew they fed chiefly on insects, but still they were "harks," and that was enough for him. There were also several Tawny Owls, a few Kestrels, a Sparrowhawk, and a Raven among these and other victims.—Edward Newton (Lowestoft).

Rare Birds in Gloucester and Somerset.—Mr. Charbonnier, a naturalist, who lives here, showed me recently the following birds, which had been sent to him for preservation:—A female Sand Grouse, which had been shot at Hambrook, in Gloucestershire, some time in the month of June last. I could not ascertain whether it had appeared alone or in company with others of its congeners. A Little Gull, procured at Clevedon about the end of October or beginning of November, in immature plumage, but in good condition. About the same time a female Eider Duck was shot on the reservoir of the Waterworks at Barrow, in Somersetshire, a few miles from here.—Marcus S. C. Rickards (12, West Mall, Clifton).

Pectoral Sandpiper in Ireland.—A bird of this species (*Tringa maculata*, Vieillot) was obtained in the Dublin market in the middle of October last. Upon making enquiries, I was informed that it had been forwarded from Portumna along with a lot of Snipe. It was extremely fat, and in regard to weight differed considerably from that given in the last edition of Yarrell's 'British Birds,' for it almost turned the scales at 8 oz. It proved on dissection to be a male.—EDWARD WILLIAMS (2, Dame Street, Dublin).

The Smew in Perthshire.—On the 20th November last a female Smew, *Mergus albellus*, was shot on one of the salmon-breeding ponds at Stormontfield, feasting on the young Salmon. It disgorged four about two inches long, and had in its stomach a number more or less digested. It is a rare bird in Perthshire, and its occurrence is therefore worth recording. I may also mention that a few Razorbills and Guillemots have made their appearance on the Tay in this neighbourhood; they are common on the estuary of the Tay, but seldom find their way so far inland.—THOMAS MARSHALL (The Store, Stanley).

Roller at Rainham.—The recent occurrence of the Roller, *Coracias garrula*, one of our rarest continental visitors, is I think worth reporting. When first seen, on Nov. 8th, it was sitting upon the end of a mangold-wurzel clump, where my labourers were at work. As it appeared to be very weak, they gave chase over the hedge, and finally captured the bird alive on our Rainham Marsh. It was very thin in condition, dying soon after being caught, its death being probably hastened by the effects of a very cold day.—W. PRENTIS (Rainham),

Solitary Snipe and Sabine's Snipe in Ireland.—The second specimen of the Solitary Snipe, *Gallinago major*, which has come under my notice was shot by Mr. W. H. Reese, of Glenerd, Co. Galway, on October 12th. The so-called "Solitary Snipes" that sportsmen meet with in Ireland are generally very large individuals of the common bird. I have received at least a dozen, forwarded for preservation under the belief that they were the rarer species. A good specimen of Sabine's Snipe—now generally regarded as a variety of the Common Snipe—was obtained by Mr. J. Law, of Burt House, Londonderry, in September last. In this bird, as in several others of the same variety which have passed through my hands, the dark marks are continued right across the under parts, which are always white in the Common Snipe.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Night Heron in Lincolnshire.—A specimen of the Night Heron, *Nycticorax griseus*, in immature plumage, was shot on November 26th on the foreshore at Tetney, by one of the wild-fowlers who was engaged in plover-netting. The bird measured twenty-four inches in length; wing, twelve inches. The irides were bright red, bare skin round the eyes greenish yellow, and legs and feet green, with a shade of yellow. When first flushed it only flew a short distance and settled again.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby).

An unrecorded Squacco Heron.—The Squacco Heron, *Ardea ralloides*, occurs so rarely in this country that every visit is of interest, especially to those who are working out the avifauna of their county. On writing to Sir Percy F. Shelley, asking him for particulars of one that was formerly in the collection of the late Mr. Berkley, he very kindly replied as follows:—"The bird you have I gave to Mr. Berkley. It was shot by my keeper at the Warnham Ponds, Sussex, about two miles from Horsham, on the hottest day of a very hot summer, 1849. In its stomach were fourteen small roach (without their heads, however); the Warnham Ponds are full of these fish."—Edward Hart (Christchurch).

Crane near Colchester.—On November 9th a Crane, *Grus cinerea*, was shot in a field at Elmstead, near Colchester, and has now come into my possession. It appears to be a bird of the year, as its wing-feathers (tertiaries) are not fully developed. Its rarity, and its being probably the first known to have been captured in Essex, makes it worth recording in 'The Zoologist.'—Henry Laver (Head Street, Colchester).

The Avocet in North Devon.—On a recent visit to Mr. Rowe, taxidermist, of this town, I saw a female specimen of the Avocet, *Recurvirostra avocetta*, which was killed near the mouth of the river Taw, on Nov. 13th. This bird, I believe, is now very rare in the British Islands, and more particularly in the south-west of England. Perhaps the fact of one being killed so recently is worth recording, and will interest many of your readers.—J. G. Hamling (The Close, Barnstaple).

[Another was shot in the same estuary the following day, and was taken for preservation to Mr. Frayne, taxidermist, of Barnstaple. A fortnight previously two Avocets were shot at Exmouth.—Ed.]

Pallas's Sand Grouse in Co. Clare.—A beautiful adult male of this species was exposed for sale in the Dublin market during the second week of November last. It was shot in the Co. Clare, and £2 10s. was asked for it.—Edward Williams (2, Dame Street, Dublin).

Pallas's Sand Grouse in Lincolnshire.—Since the publication of my notes (Zool. 1888, p. 419) on the Sand Grouse in this county I have met with two occurrences of more recent date:—October 23rd. A flock of twenty, recorded in 'The Field' of Oct. 27th by Mr. T. W. Harrison, was seen in the parish of Goxhill, near the Humber, and one was shot. Nov. 8th. A flock of forty seen at Grainthorpe, near the sea-coast, by the son of Mr. Stubbs, the wildfowl shooter.—John Cordeaux (Great Cotes, Ulceby).

Fulmar and Spotted Redshank in Co. Sligo.—On the 5th of October last, when walking along the Enniscrone Sands, I found a Fulmar Petrel thrown up by the surf at high-water mark; it was perfectly fresh and in fine plumage. I picked it up on the same part of the sands where I have previously found several others, the tides affected by high northerly gales bringing the water-logged birds ashore. On October 20th, when in my shooting punt, I came across a Spotted Redshank on the Scurmore Strand, but, not distinguishing it in time from the Common Redshanks about, I lost my chance of shooting it before it made off.—ROBERT WARREN (Moyview, Ballina).

Unusual site for a Sedge Warbler's Nest.—A case of the Sedge Warbler, *Acrocephalus phragmitis*, building at a height from the ground came under my observation last June. The nest was supported between the stem and one or two boughs of a young larch in a plantation of the same trees, and was placed at between seven and eight feet from the ground, or about three-quarters up the tree. There were five eggs, which were hatched off safely.—L. W. WIGLESWORTH (Castlethorpe, Bucks).

Materials in Nest of Hooded Crow.—Although I often see mention of curious nesting-places, I do not think many observers send notes of strange materials used in the construction of nests. I have looked through 'The Zoologist' for the last eleven years, and can only find a short note on this subject by Mr. Booth (Zool. 1887, p. 389), in which he describes the materials he has found in Cormorants' nests—such odd things as "children's whips and spades, a gentleman's light cane, and part of the handle of a parasol, all of which (he supposes) the birds had picked up floating at sea." Let me tell you of a Hooded Crow's nest which was built not far from here last year (1887), and which was found to contain bits of blue china, glass, a few small stones, and a very old half-crown! Could the birds have appropriated a Magpie's old nest, after first dismantling the outworks? Or, do Hooded Crows occasionally follow the bad example of the Jackdaw of Rheims?—WILLIAM W. FLEMYNG (Clonegam Rectory, Portlaw, County Waterford).

A White Snipe.—A white Snipe was shot at Throphile, on this estate, in September. The colour is not dead-white, but a very pale grey, on which the dark bars and markings are visible. This bird is in the possession of Col. Osbaldeston Mitford. I send the dimensions in case this specimen may be a variety:—Length, bill to tail, ten inches, of which the bill is two inches and seven-tenths; tarsus, one inch and three-tenths.—E. L. MITFORD (Mitford Hall, Morpeth).

Ring Ouzel breeding in Orkney.—In the useful 'Manual of British Birds,' by Mr. Howard Saunders, which Messrs. Gurney and Jackson are now publishing in parts, it is stated (p. 15) with regard to the Ring Ouzel, *Turdus torquatus*, that it breeds " in the greater part of Scotland, including most of the islands which present suitable features, *except the Orkneys and Shetlands*, to which it is comparatively a rare visitor." In former years I was well acquainted with the birds of Orkney, more especially with those of the parish of Harray on the mainland (or Pomona, as it is called by geographers, but not by Orcadians). This parish is separated from the sea by hills almost all round. The Ring Ouzel, though not so often seen in the more level portions of the parish, was not rare in the glens or dales amongst the hills; and in one of these glens I once found a nest with four eggs, one of which I took, and still have in my possession as a proof that this bird does breed in Orkney.—J. W. H. Trail (71, High Street, Old Aberdeen).

FISHES.

Food of the Haddock.—In the stomach of a Haddock recently purchased alive at Hartlepool, were found fourteen young whiting, from four to five inches long, and a small crab, with hard carapace, about one inch in diameter, all quite fresh and digestion barely commencing, The Haddock was seventeen inches long, and weighed, when gutted, twenty-six ounces. The weight of the young fry and crab was six and a half ounces, or almost one quarter of the weight of the fish.

SCIENTIFIC SOCIETIES.

Linnean Society of London.

December 6, 1888.—W. Carruthers, F.R.S., President, in the chair.

The following were elected Fellows:—H. E. D'Alton, of Victoria; P. Goyen, of Otago, N. Z.; G. A. Grierson, Lecturer in Botany, Sheffield School of Pharmacy; Maurice Holtze, Superintendent Botanic Garden, Port Darwin; R. W. Hullett, Singapore; J. C. Lisboa, M.D., Fellow Bombay University; J. H. Lace, Forest Department of India; Professor J. B. L. Mackay, Director School of Mines, Sandhurst, Australia; E. W. Mayhew, Freemantle, W. Australia; Digby S. W. Nicholl, Cowbridge, Glamorganshire; D. T. Playfair, M.D.; D. Prain, M.B; Clement Reid, F.G.S.; A. B. Rendle, B.A., B.Sc.; and Peter Yates, M.D.

Mr. W. H. Beeby exhibited, and made some remarks on, specimens of *Valeriana mikanii* and *sambucifolia*, and a series of *Potamogeton fluitans*.

Mr. F. W. Oliver described the nature and growth of leaf emergences in *Eriospermum foliolifera*.

Mr. E. M. Holmes exhibited specimens of a new assafœtida plant, *Ferula fœtidissima*, and a monstrosity of *Zea mays*.

Mr. J. G. Baker exhibited a curious variety of *Vicia sepium* found in North Yorkshire.

Mr. T. Christy exhibited specimens of an undetermined species of *Echium* received from Persia, and employed medicinally as a good alterative.

The first paper read was one by Dr. Costerus on malformations in *Fuchsia globosa*, upon which Prof. Bower offered some critical remarks.

The next paper was by Mr. B. T. Lowne, who gave an admirable demonstration of the mode of development of the egg and blastoderm of the Blow-fly. His conclusions were criticised by Prof. Stewart, Prof. Howes, and Mr. A. R. Hammond.

In continuation of the Reports on the collection made by Mr. Ridley in Fernando Noronha, a paper was read, on behalf of Mr. Boulenger, enumerating the Fishes and Reptiles which had been identified by him.

The meeting then adjourned until Dec. 20th.

ZOOLOGICAL SOCIETY OF LONDON.

November 20, 1888.—Prof. **FLOWER**, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the months of June, July, August, September, and October, 1888, and called attention to the acquisition of three specimens of Pallas's Sand Grouse, *Syrrhaptes paradoxus*, captured in Scotland.

A letter wss read from Prof. J. B. Steere, giving a preliminary account of the "Tamaron," a Bovine animal found in the island of Mindoro, Philippines, which he believed to be allied to the Anoa of Celebes.

Mr. Edgar Thurston exhibited, and made remarks upon, a collection of corals from the Gulf of Manar, Madras Presidency.

Mr. H. Seebohm exhibited, and made remarks on, a specimen of a new species of Pheasant, *Phasianus tarimensis*, obtained by General Prejevalsky at Lob Nor, Central Asia. Mr. Seebohm also exhibited a specimen of a species of Plover new to the British Islands, *Vanellus gregarius*, which had been shot in Lancashire about twenty-five years ago, and had been previously supposed to be a Cream-coloured Courser. [See Zool. 1888, p. 389.]

Mr. J. W. Hulke read a paper on the skeletal anatomy of the Mesosuchian Crocodiles, based on fossil remains from the clays near Peterborough, in the collection of Mr. A. Leids, of Eyebury.

Mr. Oldfield Thomas read a paper on a collection of small Mammals obtained by Mr. William Taylor in Duval County, South Texas. The collection contained examples of one new species and a new geographical variety, besides adding no less than six species to the National Collection of Mammalia.

A communication was read from M. L. Taczanowski, containing a supplementary list of the birds collected in Corea by Mr. Jean Kalinowski.

Dec. 4.—Prof. Flower, C.B., LL.D., F.R.S., President, in the chair.

Mr. Howard Saunders exhibited, and made remarks on, an adult male of the American Green-winged Teal, *Querquedula carolinensis*, shot in Devonshire in November, 1879. [This bird was noticed at the time in 'The Zoologist' (1880, p. 70), where, on the same page, another is mentioned which was shot forty years previously, at Hurstbourne Park, Hants.—Ed.]

Mr. Oldfield Thomas gave an account of the Mammals obtained by Mr. C. M. Woodford during his second expedition to the Solomon Islands. The total number of species now known from the Solomons was twenty-two, of which no less than eight had been discovered by Mr. Woodford. There were also two new genera of Bats to be added to the one previously described.

Mr. F. E. Beddard read a paper upon the genus *Clitellio*, which had been recently investigated by him at the Marine Biological Station at Plymouth. The paper contained an account of the anatomy of two species, *Clitellio arenarius* and *C. ater;* the most important fact referred to was the presence of an oviduct, which had only lately been found in the *Tubificidæ* (in the genus *Psammoryctis*). The paper also contained some remarks upon the synonymy of the two species, particularly of *C. ater*, which was probably identical with d'Udekem's *Tubifex benedii* and with Zeuger's *Peloryctis inquilina.* It was also pointed out that *C. ater* is not congeneric with *C. arenarius*, but probably belongs to Eisen's genus *Hemitubifex.*

Prof. Howes and Mr. Davies read a paper on the distribution and morphology of the supernumerary phalanges in the Anurous Batrachians. The authors described for the first time the primary mode of development of a supernumerary phalanx. They concluded that the same is in the Anura identical with the interphalangeal syndesmoses, and that the syndesmoses and phalanges are derivatives of a common blastema. In its fully differentiated condition the structure in question was shown to be functional in receiving the direct thrust under the weight of the falling body in saltation; all the variations in structure being readily intelligible on that view. The authors discussed the bearings of the facts upon classification and upon the broader question of the morphology of supernumerary phalanges in general. They showed that the facts of development indicated a probable intercalary origin of the latter from the inter-articular syndesmoses; and that the numerical increase of the phalanges in the Cetacea may have been associated with the loss of ungues, somewhat similarly to the way in which the multiplication of segments of the cartilaginous rays in the paired fins of the Batoidei would appear to have been connected with the disappearance of horny fin-rays. The authors also showed that the *Discoglossidæ* alone among the Anura retained for life the undifferentiated syndesmoses, and that this feature testified more forcibly than anything else to their low affinities. They also described a community of structure between the modified syndesmoses in certain Anura and the apparatus of the knee-joint in Mammals, and urged that the facts were such as to necessitate a reconsideration of the morphological value of the latter.

A communication was read from Mr. J. J. Lister, giving a general account of the Natural History of Christmas Island, in the Indian Ocean, which he had visited in 1887 as naturalist to H.M. surveying-vessel 'Egeria.' Mr. Lister gave a detailed account of the birds obtained in Christmas Island. Of these seven were land-birds, all of which belonged to species peculiar to the island, though some of them approached their allies in the Indian Archipelago very closely.

Mr. Oldfield Thomas read a paper on the Mammals of Christmas Island, obtained by Mr. Lister during the same expedition. This was followed by reports on the Reptiles, by Mr. G. Boulenger; on the Terrestrial Mollusks, by Mr. Edgar A. Smith; on the Coleoptera, by Mr. C. J. Gahan; on the Lepidoptera, by Mr. A. G. Butler; on the other Insects, by Mr. Kirby; and on the Annelida, Myriapoda, and Land-Crustacea, by Mr. R. I. Pocock.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

December 5, 1888.—Dr. D. SHARP, F.L.S., President, in the chair.

Mr. B. A. Bower, of Eltham, Kent, was elected a Fellow of the Society.

Mr. W. F. Kirby exhibited, for the Rev. Dr. Walker, a variety of the female of *Ornithoptera Brookiana;* he also exhibited, for Major Partridge, an undetermined species of the genus *Hadena*, captured last summer in the isle of Portland.

Mr. R. South exhibited a series of specimens of *Tortrix piceana*, L., from a pine wood in Surrey; also melanic forms of *Tortrix podana*, S., from St. John's Wood.

Prof. Meldola exhibited, for Dr. Laver, a melanic specimen of *Catocala nupta*, taken last September at Colchester.

Mr. E. B. Poulton exhibited preserved larvæ of *Sphinx convolvuli*, showing the extreme dark and light forms of the species.

Mr. M'Lachlan called attention to a plate, representing species of the genus *Agrotis*, executed by photography, illustrating a memoir by Dr. Max Standfuss, in the Correspondenz-Blatt, Verein 'Iris,' in Dresden, 1888. He considered it was the best example of photography as adapted for entomological purposes he had ever seen, especially as regarded its stereoscopic effect.

The Rev. Canon Fowler exhibited a specimen of *Mycterus curculionoides*, L., sent to him by Mr. Olliff, and taken by Mr. Gunning near Oxford about 1882.

Mr. W. Nicholson exhibited several melanic varieties of *Argynnis niobe* and *A. pales*, collected by himself last summer in the Engadine.

Mr. J. H. Leech exhibited a small collection of Lepidoptera formed last year by Mr. Pratt at Kiukiang, Central China. It included several new species, also specimens of a variety of *Papilio sarpedon* and other interesting forms.

Mons. A. Wailly exhibited a collection of Lepidoptera lately received from Assam, containing upwards of thirty-five species of *Papilio*, *Ornithoptera*, *Charaxes*, *Diadema*, *Cyrestis*, and other genera.

Mr. Meyer-Darcis exhibited specimens of *Sternocera tricolor*, Kerr, and *S. variabilis*, Kerr, from Lake Tanganyika; also two new species of *Julodis* from Syria.

Mr. F. Merrifield exhibited, and made remarks on, a long series of *Selenia illustraria*, *S. illunaria*, and *E. alniaria*, in illustration of his paper on "Pedigree Moth-breeding."

Lord Walsingham exhibited, and made remarks on, a series of species representing the genera *Snellenia*, Wlsm., *Œdematopoda*, Z., and *Eretmocera*, Z.

The Rev. T. A. Marshall communicated a paper entitled "A Monograph of British *Braconidæ*. Part III."

The Rev. Dr. Walker communicated a paper entitled "Description of a variety of the female of *Ornithoptera Brookiana*."

Lord Walsingham read a paper entitled "A Monograph of the genera connecting *Tinægeria*, Wlk., with *Eretmocera*, Z." A discussion ensued, in which Mr. Stainton, Dr. Sharp, and others took part.

Mr. Merrifield read a paper entitled "Incidental Observations in Pedigree Moth-breeding." This paper contained a detailed account of experiments with *Selenia illustraria*, *S. illunaria*, and *E. alniaria*, which, so far as they had yet proceeded, indicated that retardation of development in the growing stages of the larvæ, as well as in the pupal stage, was the cause of the darkening of colour in the perfect insects; that a low temperature had the effect of causing such retardation; and that growing the larvæ at a forcing temperature tended to produce a warmer and yellower tint in the colouring of the moths. Lord Walsingham, Mr. Poulton, Prof. Meldola, Mr. White, and Mr. Merrifield took part in the discussion which ensued.

Mr. J. H. Leech read a paper "On a small collection of Lepidoptera from Kiukiang." Mr. Elwes said he had examined this collection with very great interest, and was struck with the similarity of many of the species to those from Sikkim.—H. Goss & W. W. Fowler, *Hon. Secretaries.*

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